UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/758,113	01/16/2004	Shigeru Unami	023971-0357	4984

22428 7590 08/11/2006

FOLEY AND LARDNER LLP
SUITE 500
3000 K STREET NW
WASHINGTON, DC 20007

EXAMINER	
MAI, NGOCLAN THI	
ART UNIT	**PAPER NUMBER**
1742	

DATE MAILED: 08/11/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/758,113	UNAMI ET AL.	
	Examiner	Art Unit	
	Ngoclan T. Mai	1742	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *05 July 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *9-13,15-19 and 21-25* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-13, 15-19 and 21-25* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. Upon further consideration, claims 9-13 are rejected as below.

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claim Rejections - 35 USC § 103

3. Claims 9-13, 15-16, 18-19, and 21-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Semel (U.S. Patent No. 6,068,813) in view of Tsuchida et al. (U.S. Patent No. 6,344,169, art of record, now "Tsuchida").

Semel discloses a method for making powder metallurgy composition having improved mechanical strength properties when formed into metal parts comprising:

preparing a powder mixture, wherein the powder mixture consisting essentially of fine metal powder particles having particle size 75 micron or smaller (col. 7, l. 34-42, co. 8, l. 50-64), graphite powder in an amount of 0.1 to 1.2% by weight (col. 10, l. 21-29), and a powder lubricant in a amount of from 0.1 to 1.5% by weight (col. 10, l. 43-63),

compacting the powder mixture in a die to provide a green compact (col. 14, l. 37-44),

sintering the green compact (col. 14, l. 45-54).

Semel differs for the claims in that Semel does not specifically teach applying a die lubricant to the die.

Tsuchida disclose a method for compaction of powders comprising packing powders for powder metallurgy formulated with a lubricant in a compacting die whose inner wall surfaces are applied with a lubricant and subjecting the packed powders to warm or hot compaction (col. 2, l. 46-55) .

Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to compact the powder mixture of the Semel in a die whose wall surfaces are lubricated as taught by Tsuchida to reduce friction between the compacted powders and the die in order to obtain a reliable green compact of high density (col. 2, l. 41-45). Since Semel in view of Tsuchida teach the method for

compacting powders having particles size substantially as claimed, the sintered body would inherently have sintered metal particles having a maximum particle size of 100 microns or smaller.

As for claims 18 and 19, Tsuchida et al teaches that the compaction temperature and the temperature to preheat the die are set to be no more than 3 time the melting temperature of the lubricant, col. 5, lines 4-53 and Tables 1 and 2. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to employ the compaction step of Semel under conditions as taught by Tsuchida so that a high density of green compact can be obtained. Since zinc stearate has melting temperature 126 C, it would have been obvious to one of ordinary skill in the art that the die of Semel be preheated at temperature higher than 126 C to facilitate die compaction as taught by Tsuchida et al.

Regarding claim 21, Semel teaches sintering at temperature ranging from about 1900°F to about 2400°F or 1037°C to 1315°C (col. 14, l. 45-54).

As for claim 10 and 22 Semel teaches after sintering the body is tempered (col. 4, l. 37-40). The tempering step read on the claimed heat-treating.

4. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Semel and Tsuchida as applied to claim 13 above, and further in view of Arvidsson et al. (U.S. Patent No. 6,120,575, art of record, now "arvidsson")

Semel in view of Tsuchida do not teach agglomerating the powder mixture to have particle size as claimed.

Arvidsson teaches agglomeration of iron-based powder mixture having particle size less than 75 microns to form agglomerated having particle size between 75 to 150 microns to not only prevent segregation and dusting during handling but also provide good flow, which is necessary prerequisite for industrial production, col. 1, lines 58 –63 and col. 2, lines 19-23.

Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to also agglomerate the powder mixture of Semel in order to have particle size as disclosed by Arvidsson et al. for the noted benefits.

5. Claims 11, 12 and 24-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Semel in view of Tsuchida as applied to claims 9 and 13 above, and further in view of Fujiki et al. (U.S. Patent No. 6,332,904, art of record).

Semel in view of Tsuchida do not teach forming the sintered body forms at least the sprocket of a silent chain, or a high strength part of an internal combustion engine. However, it is known in the art that sintered bodies having high mechanical strength can be formed into automobile component such as engine cam sprocket, see Fujiki et al. col. 10, l. 19-41. Thus forming the sintered bodies made by the method of Semel in view of Tsuchida into metal parts having structure as claimed is conventional and would have been obvious.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ngoclan T. Mai whose telephone number is (571) 272-1246. The examiner can normally be reached on 9:30-6:00 PM Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on (571) 272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

N. Ngoclan Mai

Ngoclan T. Mai
Primary Examiner
Art Unit 1742

n.m.